material of the shaped body is at least partially softened by heat or/and is in a flowable state, and whereby at least one part of a region of the shaped body located near the surface is modified at this temperature or/and during a succeeding cooling process, in that the coating material completely or at least partially infiltrates the region of the shaped body located near the surface, and wherein the shaped body treated in such a manner is enriched with oxygen during the cooling process or/and during a succeeding heat treatment whereby the modification contributes to the increase in remanent induction or/and to the increase in the critical current density of the shaped body enriched with oxygen.

3. (Amended)A method in accordance with claim 1, characterised in that the shaped body of the superconducting material was produced by a melt-texturising process, by a zone-melting process, by a single crystal growth process or by producing a texturised polycrystalline superconducting material.

4. (Amended)A method in accordance with claim 1, characterised in that, prior to or/and after the modification thereof, the shaped body of the superconducting material comprises one to one hundred grains or/and one to one hundred domains, preferably just one grain and up to four domains.

5. (Amended)A method in accordance with claim 1, characterised in that the untreated or/and the treated shaped body of the superconducting material, the coating material

or/and the layer of material includes phases which are selected from the group of phases corresponding to an approximate composition of $Y_1Ba2Cu_3O_v$, $Y_2Ba_1Cu_3O_w$, $Yb_1Ba_2Cu_3O_{v'}$, $Yb_2Ba_1Cu_1O_{w'}$, $Er_1Ba_2Cu_3O_{v'}$, $Er_2Ba_1Cu_1O_{w'}$, $Sm_1Ba_2Cu_3O_{v''}$, $Sm_2Ba_1Cu_1O_{w''}$, $Nd_1Ba_2Cu_3O_{v''}$, $Nd_4Ba_2Cu_2O_{w''}$, Y_2O_3, CeO_2, Pt, PtO_2, Ag and AgO_2, where Y, Yb, Sm or/and Nd may also be partially substituted by other lanthanides or Y, and wherein other related chemical elements may occur in Ag or/and AgO_2.

6. (Amended)A method in accordance with claim 1, characterised in that the untreated or/and the treated shaped body of the superconducting material, the coating material or/and the layer of material comprise calcium or/and other cations which alter the band structure of the electrons and contribute to the higher critical transport current densities.

7. (Amended)A method in accordance with claim 1, characterised in that the shaped body of the superconducting material or/and the coating material comprise at least one gradient in regard to the chemical composition, the grain structure or/and the peritectic flow or melting temperatures.

8. (Amended)A method in accordance with claim 1, characterised in that the coating material is applied such as to have a layer thickness in the range from 1 µm to 5 mm, preferably 10 µm to 3 mm, and especially preferred from 50 µm to 2 mm.

9. (Amended)A method in accordance with claim 1, characterised in that the coating material is applied in the form of a powder, a shaped body or/and a coating – the powder preferably being a powder mixture or in granular form, the shaped body is preferably a compressed, a calcinated, a sintered or a molten shaped body, and the coating is preferably in the form of a physically or/and a chemically deposited coating that is basically produced by precipitation, sputtering or spray-pyrolysis.

10. (AmendedA method in accordance with claim 1, characterised in that a powder-like coating material is applied, that a shaped body of the coating material is placed on the corresponding surface of the shaped body of the superconducting material, or/and that the coating process is effected from the gas phase, from a solution or suspension or by using an aerosol.

11. (Amended)A method in accordance with claim 1, characterised in that the coated shaped body of the superconducting material is maintained at a temperature corresponding to Claim 1 until such time as a part of the coating material penetrates or diffuses into the superconducting material.

12. (Amended)A method in accordance withclaim 1, characterised in that, during the modification of the superconducting material, a gradient is produced in the shaped body of the superconducting material or/and in the layer of material produced from the coating material.

13. A method in accordance with claim 1, characterised in that the residual crystal nuclei, the layer of material or/and the uneven surface of the shaped body is mechanically removed after the modification of the superconducting material, and in that the shaped body is subjected thereafter to a heat treatment if necessary.

14. (Amended)A method in accordance with claim 1, characterised in that a shaped body of the superconducting material is produced substantially in the form of plates, solid cylinders, hollow cylinders, rings, discs, bars, tubes, wires, tapes or coils.

15. (Amended)A method in accordance with claim 1, characterised in that the shaped body of the superconducting material is in direct contact only with a superconducting material based on (Y/Rare Earth)BaCuO and, possibly, with a coating material during the firing and heat treatments.

16. (Amended)A method in accordance with claim 1, characterised in that a large-sized shaped body of the superconducting material comprises a plurality of mutually spaced crystal nuclei whose c-axes are oriented along one of the main axes or main directions of the geometry of the shaped body or are at right angles thereto.

17. (Amended)A method in accordance with claim 1, characterised in that a large-sized shaped body of the superconducting material is produced in a plurality of segments, which are jointed together if necessary, especially by heat treatment at a temperature corresponding to Claim 1, possibly by the application of pressure and possibly by the addition of a coating material to the boundary surfaces that are to be jointed together.

18. (Amended)A shaped body of a superconducting material based on (Y/Rare Earth)BaCuO which is obtainable by a method in accordance with claim 1, characterised in that it contains at least one Rare Earth element selected from the group consisting of Y, La, Ce, Pr, Nd, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu, and in that it has a maximum value of remanent induction at 77 K and 0 T of at least 1100 mT, preferably of at least 1200 mT, and even more particularly preferred of at least 1300 mT, and above all of more than 1400 mT.

20. (Amended)A shaped body in accordance with Claim 18, characterised in that it substantially comprises a composition of (Y/Rare Earth)$_1Ba_2Cu_3O_x$ where x lies in the range from 6.5 to 7 and wherein Y or/and Rare Earth may be in excess.

21. (Amended)A shaped body in accordance with claim 18, characterised in that it consists to more than 60 Vol.-% and preferably to more than 80 Vol.-% of one phase of the composition (Y/Rare Earth) $_1Ba_2Cu_3O_x$ where x lies in the range from 6.5 to 7, preferably to more than 90 %, and particularly preferred to more than 95 %.

22. (Amended)A shaped body in accordance withclaim 18, characterised in that it has a critical transport current density of at least 4 x 10^4 A/cm^2 in the external field of 1 x T at 77 K, preferably of at least 6 10^4 A/cm^2, and particularly preferred of at least 8 x 10^4 A/cm^2.

23. (Amended)A shaped body in accordance with claim 18, characterised in that it has a fracture toughness as determined by the fracture system about the hardness impressions of at least 1 Mpa √m, preferably of at least 1.5 Mpa √m.

24. (Amended)The use of a shaped body consisting of a superconducting material produced in accordance with claim 1 on the basis of (Y/Rare Earth)BaCuO, for transformers, current breakers, power leads, magnetic screenings, magnetic bearings or/and as magnets, especially as cryogenic bearings, in flywheel storage devices, in particle accelerators, in the rotors of electrical machines.

25. (Amended)The use of a shaped body consisting of a superconducting material in accordance with claim 18 for transformers, current breakers, power leads, magnetic screenings, magnetic bearings or/and as magnets, especially as cryogenic bearings, in flywheel storage devices, in particle accelerators, in the rotors of electrical machines.